Patent Claims

1. A biosensor operating on an electrochemical detection principle and having a transducer array which contains a flexible metal/isolator composite composed of a metal layer (1, $10_i$) and an isolator layer (2, $20_i$) with a permanent connection between the metal surface and the isolator surface,
characterized in that

- the metal layer is in the form of a self-supporting metal substrate (1, $10_i$) and is structured in such a manner that metal areas which are electrically isolated from one another are produced,
- the isolator (2, $20_i$) which is located on the metal substrate (1, $10_i$) is structured in such a manner that open metal surfaces remain as sensor surfaces ($12_i$) in the isolator surface (2, $20_i$), and in that
- the structured metal areas (1, $10_i$) can be made contact with on the side facing away from or opposite the sensor surface ($12_i$) by means of discrete electrodes (WE, CE, Ref), in which case the individual metal areas (1, $10_i$) may each have associated individual measurement electrodes (WE, CE) on the one hand and at least one reference electrode (Ref) on the other hand.

2. The electrochemical biosensor as claimed in claim 1, characterized in that the isolator layer (2) forms cavities ($3_i$) over the sensor surfaces ($11_i$).

3. The electrochemical biosensor as claimed in claim 1 or claim 2, characterized in that electrical contacts (4a, b, c) are provided, with the contacts (4a, b, c) and the sensor surfaces ($12_i$) being located on opposite sides of the metal/isolator composite (1, 2).

4. The electrochemical biosensor as claimed in claim 3, characterized in that the contacts (4a, b, c) are fitted to the metal areas ($11_i$), which are exposed on both sides, directly opposite the sensor surfaces.

5. The electrochemical biosensor as claimed in claim 3, characterized

in that the contacts (4a, b, c) are fitted to the metal areas ($11_i$), which are exposed on one side, such that they are laterally offset with respect to the sensor surfaces.

6. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that a single sensor surface ($101_i$) contains at least two electrically isolated metal areas.

7. The electrochemical biosensor as claimed in claim 6, characterized in that gaps which form additional isolator areas ($40_i$) are formed between the two metal areas ($10_i$) on the contact side.

8. The electrochemical biosensor as claimed in claim 7, characterized in that the additional isolator areas ($40_i$) leave metal areas ($10_i$) free for electrical contact to be made.

9. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the sensor surfaces ($12_i$) are composed of a noble metal or a noble metal alloy.

10. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the sensor surfaces ($12_i$) are coated with a noble metal or a noble metal alloy.

11. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that electrodes are provided on a graphite base, for example in the form of a carbon paste electrode.

12. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that at least one of the sensor surfaces ($12_i$) is coated with silver/silver chloride.

13. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that an electrolyte is provided and wets a plurality of sensor surfaces ($12_i$).

14. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that at least two sensor surfaces ($12_i$, $12_{i+1}$) can have voltage applied to them.

15. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that at least two sensor surfaces ($12_i$, $12_{i+1}$) and one sensor surface ($12_k$) which is coated with silver chloride can be connected as a three-electrode arrangement to a potentiostat (5), with the sensor surface ($12_k$) which is coated with silver chloride being the reference electrode.

16. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that a separate reference electrode (15) is provided, and is immersed in an electrolyte.

17. The electrochemical biosensor as claimed in claim 16, characterized in that at least two sensor surfaces ($12_i$, $12_{i+1}$) and the separate reference electrode (15) can be connected to a potentiostat (5).

18. The electrochemical biosensor as claimed in claim 16, characterized in that the electrically isolated metal areas ($10_i$, $10_{i+1}$) with sensor surfaces ($12_i$, $12_{i+1}$) can have voltage applied to them.

19. The electrochemical biosensor as claimed in claim 16, characterized in that the electrically isolated metal areas ($10_i$) of one sensor surface ($12_i$) and the reference electrode (15) can be connected as a three-electrode arrangement to a potentiostat (5).

20. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the cavities ($3_i$) contain biochemical identification layers.

21. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the electrolyte areas in individual cavities ($3_i$) are isolated from one another.

22. The electrochemical biosensor as claimed in claim 21, characterized in that a separate metal surface closes the cavities ($3_i$).

23. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the sensor surfaces ($12_i$) can have a voltage applied to them with respect to the additional metal surface.

24. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that one additional sensor surface is provided per cavity ($3_i$) and is used as a reference electrode.

25. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the metal surface which closes the cavities ($3_i$) is coated with silver chloride and is used as a reference electrode.

26. The electrochemical biosensor as claimed in one of the preceding claims, characterized in that the sensor surfaces ($12_i$) have high catalytic activity.